

The Cardbox Server book.

The Cardbox Server book.

Martin Kochanski

and the Cardbox team

Cardbox Software Limited

First published in 2004 by Cardbox Software Limited.

Copyright © 2004 Martin Kochanski.

The moral right of the author has been asserted.

ISBN: 0-9548226-2-5

A catalogue record for this book is available from the British Library.

“Cardbox” and the Cardbox logo are registered trademarks of Cardbox Software Limited.

An effort has been made to ensure that all terms mentioned in the text that are known to have been claimed as trademarks have been capitalised or designated accordingly. However, nothing that appears in the text is to be taken as an assertion concerning the existence or validity of any trademark.

The author and publisher have taken care in the preparation of this book but make no warranty concerning the completeness or accuracy of the information it contains and they accept no responsibility for errors or omissions. No liability is assumed for incidental or consequential damages in connection with or arising out of the use of this book or any of the software that may accompany it.

All rights reserved. No part of this book may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying or otherwise, without the prior permission of the publisher. Printed in the United Kingdom.

Cardbox Software Limited
Scriventon House
Speldhurst
Kent TN3 0TU
England

Preface..... vii

Part One: Planning

Client-server architecture 3

Choosing the server location 4

 The server must be running.....4

 The server must be accessible through TCP/IP4

 The server must be able to open the files5

Possible configurations 6

 Intranet / LAN.....6

 Internet.....6

 Intranet/LAN plus guests7

Security..... 8

Licensing 9

 What about the Home Edition?.....10

Professional Edition licences..... 11

 A single shared installation of Cardbox11

 Individual installations, shared licence11

 Individual installations, server-based licence11

 Individual installations, licence server12

Part Two: Setup

Installing the Cardbox Server..... 15

 Removing the Cardbox Server16

 If you don't have physical access to the server computer.....16

The Cardbox Server control 17

 Opening the Cardbox Server control.....17

Starting and stopping the Cardbox Server 18

 Running the server as a program.....18

 Running the server as a system service19

 Shutting down Windows20

The Server page..... 21

The Connections page 22

 Port number23

The Licences page.....	24
User licences	25
Read-Only User licences.....	25
Professional Edition licences.....	26
Setting up a licence server	26
Part Three: Sharing databases	
The Files page.....	31
Attributes of each database.....	31
Using the Files page.....	32
Finding out the name of an existing file.....	33
The automatic directory	35
Creating a new database on the server.....	36
Using the Files page	36
Using the Automatic Directory option	36
Part Four: Security and administration	
The Admin page.....	39
Controlling file lists from a client	39
Performing backups.....	40
Downloading backup copies.....	41
The Security page.....	42
Controlling setup of user profiles	42
Controlling use of encryption	43
The Log page	44
Appendix	
Upgrading from Cardbox 2.0.....	45
A brief introduction to TCP/IP	47
Identifying computers.....	47
Loopback	48
Firewalls.....	49
Virtual private networks	49
The Cardbox Server under Linux.....	50

Preface

The Cardbox Server does two things:

1. It gives shared access to Cardbox databases, so that many people can use the same database at the same time.
2. Optionally, it also gives remote access to Cardbox databases, so that you don't need to be on the same computer or even the same network as the database you are using.

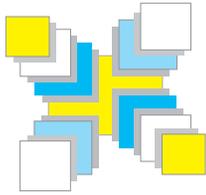
This book describes what the Cardbox Server does, and how to set it up and use it.

If you're familiar with Cardbox 2.0

If you have used a networking version of an earlier version of Cardbox for Windows, you'll find that the architecture is now very different, although from the user's point of view hardly anything has changed. The Appendix on page 45 summarises the differences and suggests a strategy for changing over to the new version.

The Linux version

The main part of this book covers the Windows version of the Cardbox Server. The Linux version works in the same way but there are differences in how you set it up and configure it. We recommend that you read through this book and then look at the section starting on page 50 for details of installing, configuring and running the Linux version of the Cardbox Server.



Part One

Planning

The client-server architecture; an introduction to TCP/IP; basic requirements; some possible configurations; security; licensing.

Client-server architecture

The “one program” rule

There is one simple rule that applies to Cardbox database files:

- **Only one program at a time is allowed to open a Cardbox database file.**

We apply this rule to ensure that your Cardbox data remain secure and undamaged. Earlier versions of Cardbox allowed many users to open the same database file at the same time, but although this worked well most of the time, it did make data vulnerable to bugs and misconfigurations in the operating system’s networking software.

Sharing databases among users

So what do you do when you want several people to open the same database at the same time? This is where the client-server architecture comes in:

The Cardbox Server opens the database file.

Each user’s copy of Cardbox communicates with the Cardbox Server when it wants access to the database. All database operations – searching, editing, display and printing – are done in the same way: Cardbox sends a request to the Cardbox Server, the Cardbox Server does what is requested and sends a response back to Cardbox. In other words, this is a client-server architecture with Cardbox as the client and the Cardbox Server as the server.

From the user’s point of view, there is virtually no difference between opening a database file directly and communicating with the Cardbox Server. When opening the database, the File > Open command opens a window with multiple pages: the File > Open » My Computer page is for opening database files on the user’s own computer and the File > Open » Server page is for opening databases on a Cardbox Server.

Choosing the server location

The requirements for someone to be able to access a Cardbox database using the Cardbox Server are very simple:

1. The Cardbox Server must be running on a computer that is using either Windows or Linux. It must be running whenever someone wants to open a database on it.
2. The user's copy of Cardbox must be able to establish a TCP/IP connection to the computer on which the Cardbox Server is running.
3. The Cardbox Server program must be able to open the database files that the user is requesting.

The server must be running

The first requirement of the computer that runs the Cardbox Server is that it should be running whenever anyone wants to open a Cardbox database. In many offices there is already a file server that holds all the shared files for the office, and this will often be left running continuously for days, weeks, or months at a time. Such a computer is a good choice for running the Cardbox Server as well.

It may be that you can't use the office file server to run the Cardbox Server. The reasons for this may be technical (for example, the server runs Novell software and not Windows or Linux) or they may be political: perhaps your system administrators don't want any other software to run on the file server. In that case, you can run the Cardbox Server on any other computer on the network, but you do need to make sure that the computer will be switched on whenever anyone needs to open a shared Cardbox database.

The server must be accessible through TCP/IP

Modern local area networks use TCP/IP by default, but if you are running an older network then you may have to check that the TCP/IP protocol is available and install it if it isn't. The Networking control in the Windows Control Panel lets you view the installed protocols and add new ones.

If there are any firewalls on your system, you will have to ensure that they are set up so as to permit client (user) computers to open a TCP connection to your server using port number 3105.

See page 49 for more details.

The server must be able to open the files

The commonest arrangement is for all the Cardbox database files to be stored on the same computer that is running the Cardbox Server: this is also the best arrangement because it gives the fastest file access.

This is not an absolute requirement. For example, your company's policies may dictate that the Cardbox Server should run on a different computer from the main file server, but that all files should be stored on the file server.

If you do have the database files on a computer other than the Cardbox Server one, and you choose to run the Cardbox Server as a Windows system service, then there is a technical point that you have to be careful of. Windows will, by default, run system services under a special user account called `LocalSystem`. The `LocalSystem` account does not, by default, have access to any files outside the computer it is running on. In this case, if your database files are on a different computer then you will have to use the Windows Control Panel to change the account used by the Cardbox system service.

Cardbox users ought not be able to open the files

If databases are being handled by the Cardbox Server then there is no need to put the database files (`.fil` and `.fmt`) into a directory that is shared on the network, and in fact it's better not to do so.

If you do have your database files in a shared directory then this isn't a disaster, but it does mean that an inquisitive or ignorant user could navigate to that directory in Windows and try to open a Cardbox database by double-clicking on the database file. If no-one is currently using the database through the Cardbox Server then this attempt will succeed but it will mean that no-one else can share that database until the offending user has been identified or evicted.

Possible configurations

Intranet / LAN

If your LAN connections are protected by firewalls, see page 49 for how to allow Cardbox connections.

The simplest configuration is when you are using a local area network (LAN) in your office. In this case, run the Cardbox Server on your file server. Find out the computer name (in networking terms) of your file server, and every Cardbox user can then use File > Open » Server to connect to the server.

Internet

Any computer connected to the Internet can in principle run the Cardbox Server and hold Cardbox databases. This is useful if you work in a very decentralised organisation with no obvious place to have a file server, or if you are publishing databases that should be available to a wide audience.

The computer that runs the Cardbox Server can be in your office or elsewhere.

An Internet server in your office

If one of your computers is already permanently or semi-permanently connected to the Internet then you can use it to run the Cardbox Server. You'll have to consider the security implications of allowing connections from outside into that computer, and you should certainly make sure that all your Cardbox databases are protected by user profiles and passwords.

If you have a computer with a dial-up or cable connection and want to use it to run the Cardbox Server then you will need to make sure that incoming connections are not blocked, because some Internet service providers restrict the incoming connections that are allowed to get through. You will also need to check if your computer's IP address is statically or dynamically allocated, and if it's dynamically allocated then you'll need to do something about it: see page 48.

A remote Internet server

Another option is to rent a server from a hosting service and run your own Cardbox Server on it. This is probably the best option for most small to medium-sized organisations that don't want any open connections from the Internet into their own networks. If you already have a Web server of your own (as opposed to just renting space on a shared server) then you may be able to run the Cardbox Server on this.

It is also possible to pay someone to host your Cardbox databases on their own Cardbox server. At the time of writing we can't predict who will offer this service or how much it will cost, so please have a look at the Cardbox web site for details.

Intranet/LAN plus guests

It's quite common to have an office LAN and to want to allow staff members to connect into it when they are at home or when they are travelling. The implications for Cardbox depend on exactly how this is being done.

Remote desktops

If the user is connecting to his own office PC and effectively viewing its desktop on his own home PC or laptop, then there is nothing you need to do. Cardbox will be running on the office PC and not on the remote computer, so nothing has changed.

Virtual private networks

The purpose of a virtual private network (VPN) is to behave just like a LAN. This means that no reconfiguration is necessary from the point of view of the Cardbox Server, but you should make sure that the VPN itself is configured to transmit data on TCP port 3105.

Internet connections

If you have a computer on your LAN that has an Internet connection, then remote users can connect to it. This is the simplest way of allowing access by people who are travelling.

Security

Controlling connections

If the Cardbox Server is running on a computer that is part of your LAN and has no external connections, there is nothing that needs to be done.

If the Cardbox Server is running on a computer that has both a LAN and an Internet connection, you can choose whether or not to allow the Cardbox Server to respond to connection requests coming in from the Internet. The Connections page of the Cardbox Server Control lets you do this: see page 22.

If you want more precise control of what incoming connections are to be allowed (for example, allowing or disallowing connections depending on where they are coming from) then you will have to use a firewall and configure it appropriately.

After a connection has been made

In Cardbox, **File > Open » Server** presents the user with a list of available databases. You can choose to make your databases invisible so that they do not appear on this list: a legitimate user will know what database name to type in, while a outsider would have to guess. You can also have some databases that are visible and others that aren't.

User profiles and passwords

You can set up user profiles so that different people have different levels of access: certain data can be made invisible and certain commands can be disabled.

If all the user profiles require passwords then an intruder would have to guess the password in order to obtain access. Another possibility, if you are publishing data using your Cardbox Server, is to have one profile that doesn't require a password but gives very restricted access (no editing allowed, certain fields hidden) while administrators can use other profiles that give them more privileges.

Encryption

By default, Cardbox encrypts all communications between the client and the server. It is not possible for an outsider to intercept an authorised user's communications and extract information from them. In particular, passwords are never transmitted in a form that would allow them to be read.

For more about profiles,
see the relevant section of
The Cardbox Book.

Licensing

There are three editions of Cardbox available.

The Client Edition is available free of charge. It can be downloaded from our Web site.

The Home Edition is a straightforward version of Cardbox suitable for most single-user applications. It is normally supplied in book form, with a CDROM in the back of the book.

The Professional Edition has additional advanced features for use in business or where several different people may be using the same databases.

The Cardbox Server is licensed according to the number of Client Edition and Home Edition users who are allowed to connect to it simultaneously. There is no limit to the number of Professional Edition users who can connect to the Cardbox Server.

Here are some examples of how this can work:

For ways of installing a multi-user Professional Edition licence, see page 11.

Professional Edition only – you install the Professional Edition of Cardbox for everyone on your network. This is the simplest and commonest case.

Client Edition, plus an n-user server licence – you install the free Client Edition of Cardbox for everyone on the network. On the Cardbox Server, you install a licence that is rated for your maximum expected number of simultaneous users. Your users will be unable to create databases on their own computers, because your Cardbox Server licence only applies to databases on the server; but this restriction can be an advantage if you are trying to maintain some sort of control over what your users are doing.

People working from home – the crucial question is: do you need them to be able to make changes to databases even when they're not connected to your system? If you do, then give them their own copies of the Professional Edition and let them connect to your server when they need it. If you don't, then give them the free Client Edition, and make sure your server licence has the capacity to handle the extra users.

People working from Internet cafés – they will want to download Cardbox and then to connect to your server to do some work. Because these people won't be using the Professional Edition, your server will have to have a licence that covers them. Work out the maximum number of travelling users you expect to have connected to your server at any one time and install a licence that size on your server.

As you can imagine, these simple rules can give rise to a large number of different combinations. If you are planning a network, have a look at the advice on the Cardbox web site, or talk to us or to one of our distributors.

What about the Home Edition?

In principle you could give the Home Edition to someone who was working from home, to give the user the ability to edit local databases at less cost than the Professional Edition. You should think carefully before doing this, however, because you would have to make sure there's a spare licence available on your Cardbox Server for when that user connects to it, and the cost of that spare licence could outweigh the saving that you have made by going for the Home Edition.

Professional Edition licences

The commonest use of the Cardbox Server is to provide shared database access for users of the Professional Edition of Cardbox. In that case you will probably have a single, multi-user licence for the Professional Edition. You have the following choices:

A single shared installation of Cardbox

1. Install Cardbox once, and place the program files and licence in a shared directory that is accessible to all potential users of Cardbox.
2. To start using Cardbox on a workstation that has not previously used it, navigate to the shared directory (using Windows Explorer), find `CARDBOX3 . EXE`, and double-click on it. Cardbox will then create all the necessary shortcuts so that you can run it easily.

Individual installations, shared licence

Some organisations have a policy of installing software on each user's workstation rather than centrally – this is normally done to reduce the load on the network. In this case you have to do the following:

1. Create a shared directory that will contain the licence files.
2. Install Cardbox on a workstation, and tell the Setup program that you want to store the licence files separately, in that shared directory. For this first installation, you have to have read/write access to the shared directory so that Setup can put the licence files there; once this has happened, read/write access is not needed to run Cardbox itself.
3. Now install Cardbox on each of the other workstations. Again tell Setup that the licence files are in the shared directory. Read-only access to the shared directory is sufficient, because the licence files have already been created and don't need to be created again.

Individual installations, server-based licence

1. Install the Cardbox Server.
2. Install the licence in the Licences page of the Cardbox Server Control (p.24).
3. Now install Cardbox on each workstation that needs it. Don't give Setup any licence, because you have already installed the licence on the Cardbox Server.

With this arrangement, individual users' copies of Cardbox will be the Client Edition, which will not allow them to create databases on their own computers, only on the Cardbox Server.

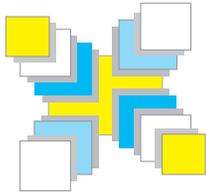
Individual installations, licence server

1. Install the Cardbox Server.
2. Install the licence in the Licences page of the Cardbox Server Control (p.24).
3. Turn on the "Lend Licences" option (p.26).
4. Now install Cardbox on each workstation that needs it. Tell Setup that Cardbox should borrow a licence from your Cardbox Server when the user runs it.

With this arrangement, individual users' copies of Cardbox will work as the Professional Edition and allow them to create and edit databases on their own computers.

First and second class citizens

Some system administrators like to divide their users according to how much they are allowed to do for themselves. Storing licences on the server allows you to do this. Set up the Cardbox Server so that it is willing to lend licences, but only configure some of your users' Cardbox installations to borrow those licences. The remaining users, the "second-class citizens", will be able to use the databases that you provide for them on the Cardbox Server, but they will not be able to create databases on their own computers.



Part Two

Setup

How to install the Cardbox Server. Opening the Cardbox Server control; starting and stopping the server; the options that you can set. Installing and removing user licences; how to set up a licence server.

Installing the Cardbox Server

For the Linux version, see
page 50

You should perform the installation procedure directly on the computer that you will be using to run the Cardbox Server. If you don't have access to that computer's keyboard, mouse and CDROM drive, see page 16.

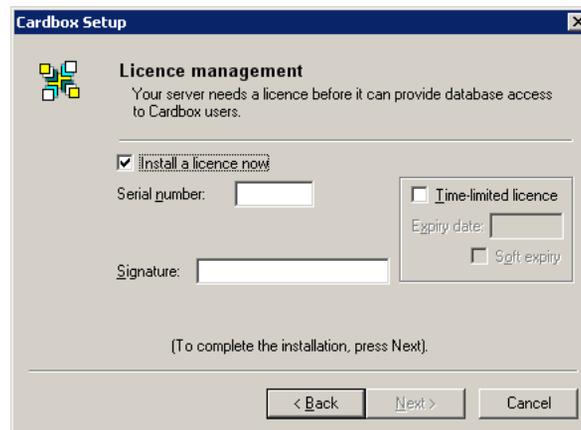
Installing from a CDROM

5. Insert the CD into the computer you have chosen to use as a server.
6. Depending on your Windows configuration, the Cardbox Server setup program may start automatically. Wait a moment or two to give it time to do this. If nothing happens, open the CDROM in Windows Explorer and double-click on SETUP.EXE (Windows may report this program name as simply Setup).
7. Follow the on-screen instructions.

Installing from the Internet

The same page that lets you download the Cardbox program files will also give you instructions for installing Cardbox after you've downloaded it.

Inserting licence details



The screenshot shows a Windows-style dialog box titled "Cardbox Setup". The main heading is "Licence management". Below the heading, it says "Your server needs a licence before it can provide database access to Cardbox users." There are three input fields: "Serial number:", "Signature:", and "Epiry date:". The "Serial number:" and "Signature:" fields are empty. The "Epiry date:" field is empty and is part of a sub-section titled "Time-limited licence". There are two checkboxes: "Time-limited licence" (unchecked) and "Soft expiry" (unchecked). The "install a licence now" checkbox is checked. At the bottom, there are three buttons: "< Back", "Next >", and "Cancel". A note at the bottom says "(To complete the installation, press Next)."

During the installation process, the setup program will show a Licence Management page that tells you what licence is installed in your copy of the Cardbox Server. If you are installing the Cardbox Server for the first time, this page will be blank and

you will have to enter the licence details before continuing. If you got the software on CDROM, the details will be on the CDROM, on a label stuck to the CD envelope, or on a separate piece of paper. If you got the software by download, you will have received the licence details by email.

Always make sure that you keep a note of your licence details, because you will need them if you ever want to re-install the Cardbox Server.

After installation

Once the installation is complete, the Cardbox Server control (part of the Windows Control Panel) will start, so that you can configure the program according to your needs. See page 17 for more information.

Removing the Cardbox Server

To remove the Cardbox Server, open the Windows Control Panel and select “Add/Remove Programs”, then find the Cardbox Server in the list of installed programs and select “Remove”.

If you don't have physical access to the server computer

If you don't have access to the keyboard and mouse of the actual server, you have two choices.

Remote desktops

Various solutions exist that allow you to use a remote server across the network, so that you see its desktop on your screen and so that keystrokes and mouse clicks go straight to the server. If you have such a setup, use it: the installation and configuration of Cardbox will be just the same as if you were using the server directly.

Network drives

If you can get access to the directory where the Cardbox Server is to be installed (this will be a directory on the file server, visible to workstations as a network directory), you can insert the CDROM into your computer's CD drive and use the standard Setup method to install the Cardbox Server in that network directory (you need full read/write access while doing this).

The Cardbox Server control

Opening the Cardbox Server control

The setup program installs an item labelled “Cardbox Server” into your Control Panel. To open the Cardbox Server control, double-click on this item.

Depending on your Windows Explorer settings, you may find the relevant icon labelled simply CBOX3CPL.

If the Control Panel item isn't there, you can open the Cardbox Server control directly by using Windows Explorer to locate `CBOX3CPL.EXE` and then double-clicking on it. (The Control Panel item will be missing if, for instance, you installed the Cardbox Server from a different computer from the one you are now using).

If you're running the Cardbox Server as a program rather than as a Windows system service, you'll also have (on the computer where the Cardbox Server is running) a small icon in the Windows system tray. Double-clicking on that icon will also open the Cardbox Server control.

- Windows sometimes hides unused system tray icons, in which case you may have to expand the system tray to see the Cardbox Server icon.

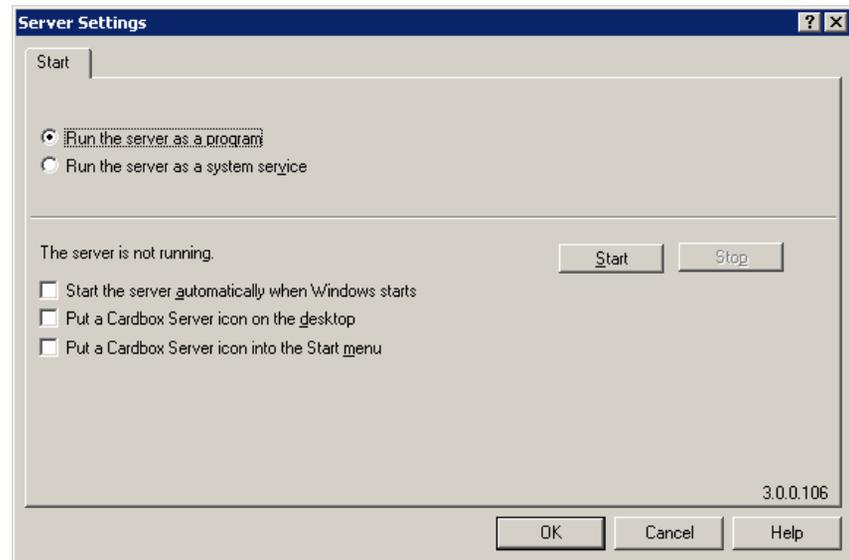
If you don't have physical access to the server

If you don't have physical access to the server and you don't have remote access to the server's desktop, you can still run the Cardbox Server control as long as the relevant directory is available as a network directory on your workstation: simply double-click on `CBOX3CPL.EXE` and the Cardbox Server control will open.

If you do this, you should note that although all the server configuration can be done remotely from your workstation, you won't be able to start or stop the Cardbox Server or discover whether or not it is running. This is because `CBOX3CPL.EXE` is running on your workstation while the Cardbox Server is running on the server, and there is no way for the two programs to communicate if they are on different computers.

Starting and stopping the Cardbox Server

The Start page of the Cardbox Server control lets you choose how the Cardbox Server should run and lets you start and stop it.



Note that although this screen has OK and Cancel buttons, all actions on the Start page take place immediately without waiting for you to press OK.

This page is only meaningful if you are running the Cardbox Server control using the actual computer that is running the Cardbox Server (either directly or through a remote desktop program). If you run the control using a workstation, then it won't be able to see or influence the status of the Cardbox Server.

Running the server as a program

Windows sometimes hides system tray icons when you haven't used them for a while: if this happens, you may need to expand the system tray to see the hidden Cardbox Server icon.

In this mode the Cardbox Server is an ordinary program. While it is running, it will appear as a small icon in the system tray: you can double-click on the icon to open the Cardbox Server control. You can also stop the Cardbox Server quickly by right-clicking on the icon and picking the appropriate item from the menu that pops up.

You can tell Windows to start the Cardbox Server automatically: in this case the Cardbox Server will start as soon as you log in to Windows.

You can also put icons on the desktop or in the Start menu to make the Cardbox Server easier to start.

Running the server as a system service

System services are available only in Windows NT, 2000, XP and above. You need to be an administrator to set up the Cardbox Server as a system service.

Unlike an ordinary program, a system service runs in the background and is not directly visible from your desktop. Buttons on the Start page let you start and stop the Cardbox Server; and you can also configure it to start automatically as soon as Windows starts, before anyone has even logged on. This is a good choice if your computer is to run as an unattended server.

Windows system services normally run in a special account called `LocalSystem`, which has relatively few privileges. You should make sure that your file permissions are set up in such a way that this account can read (and if appropriate write) your database files. You can change the account that is used to run the Cardbox Server. To do this, open the Windows Control Panel, select Administrative Tools, then Services, and then double-click on Cardbox Server.

This is an uncommon configuration: usually you'll put the database files on the same computer as the Cardbox Server.

If the database files that you want to share using the Cardbox Server are not on the computer that you are running the Cardbox Server on, this means that the Cardbox Server will have to access those files across the network. In that case, `LocalSystem` will not be the right account because it does not normally have access to network resources, and you should change the account to something more suitable.

How to confuse the Cardbox Server control

You can cause some confusion by doing the following:

1. Set up the Cardbox Server to run as a system service.
2. Using Windows directly, stop the Cardbox Server service but don't uninstall it.
3. Using Windows directly, run the Cardbox Server as a program.

Now, if you open the Cardbox Server control, it will tell you that the Cardbox Server is installed as a system service (because it still is) and that it isn't running (because the system service isn't): it won't see that the Server is running as a program. If you try to start the system service, you'll probably get an error because the Cardbox Server is already running.

This is nothing to worry about. You can simply ignore the Start and Stop buttons, or you can switch to "Run the server as a program", in which case the Cardbox Server will be uninstalled as a system service and the status display will be correctly updated.

Shutting down Windows

You don't need to stop the Cardbox Server before you shut down Windows: it will close itself automatically when Windows shuts down.

Because the Windows shutdown may be triggered by a power failure, and there may be only a few seconds of power left, the Cardbox Server is designed to shut down as fast as possible while still preserving data integrity. If necessary, it will interrupt long-running operations such as indexing and continue them automatically the next time the database is opened.

The Server page

The settings on this page take effect when you press OK. Any changes you make will affect new connections from Cardbox users to the Cardbox Server, but existing connections will continue to use the original settings.

The Automatic Directory option is described on page 35.

The screenshot shows the 'Server Settings' dialog box with the following details:

- Tab: Server
- Server identification: Our own local Cardbox server for development.
- Access to databases: Read/Write
- Automatic directory for databases:
 - Automatic directory: C:\My Documents (with a 'Browse...' button)
 - Allow users to create databases in this directory
 - Password for database creation: XXXXXXXX
- Buttons: OK, Cancel, Help

Server identification

You can enter a few words of description here. These will appear to Cardbox users when they connect to this server, in the bottom left-hand corner of the File > Open » Server command. The server identification is optional: it is there purely for the convenience of users.

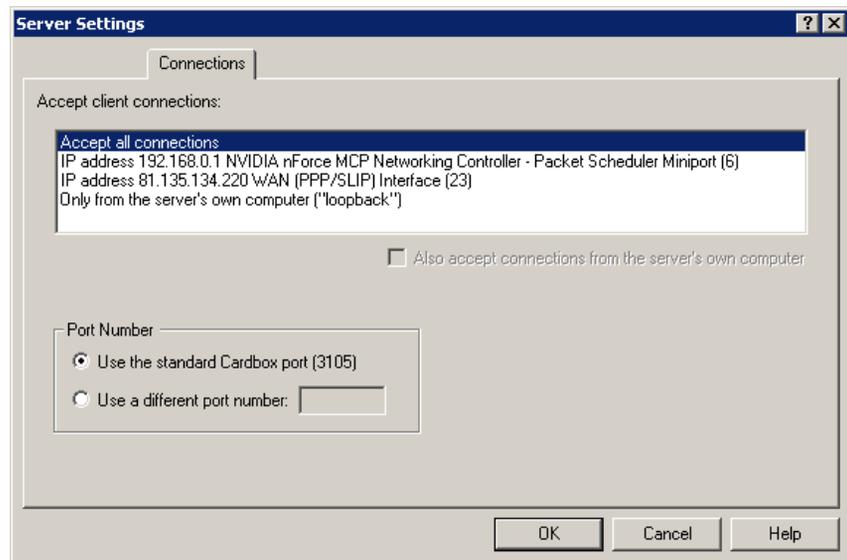
Access to databases

In a normal office network, Read/Write is the usual setting.

You can choose whether the server is to give read-only access to the databases it shares, or read/write access (allowing records to be added, edited, and deleted). If you want some databases to be read-only and others to be read/write, select "Read/Write" here and then use Windows Explorer to mark selected database files (.fil and .fmt) as read-only.

The Connections page

The settings on this page take effect when you press OK. If you change the connection rules then this will not affect any existing connections from Cardbox users



Once the Cardbox Server has started, it waits for Cardbox users (“clients”) to try to connect to it. This page lets you control how those connections should arrive, by choosing which IP address the Cardbox Server should use when “listening” for client connections. In most cases you will be able to leave the setting at its default value, which is “Accept all connections”.

For more about
IP addresses,
see page 47.

The Connections page lists all the connection types that Windows reports as being available: the list you see, and the associated descriptions, will depend on your computer’s configuration and on the exact version of Windows you are using. The different connections are identified by their IP addresses.

LAN connections

In the example, “NVIDIA nForce MCP Networking Controller” is an Ethernet networking card. It has the IP address 192.168.0.1 (this was set up when we set up networking on this computer) and any connection that comes in on this address will have come from another computer on the local Ethernet network.

WAN/Internet connections

In the example, “WAN (PPP/SLIP) Interface” is a connection to our Internet service provider (ISP). At the time that we opened the Connection page to get this example, our IP address was 81.135.134.220, but because this is a dial-up connection the IP address varies from one session to the next. Any connection that comes in on this address will have come from a computer elsewhere on the Internet.

Loopback connection

For more about
loopback,
see page **Error!**
Bookmark not defined..

“Loopback” means a connection from this computer to itself. If you run the Cardbox Server on a computer and then run Cardbox on the same computer and tell **File > Open » Server** to connect to `127.0.0.1` or `localhost`, it will connect to the Cardbox Server on your own computer. This is useful for testing purposes or when setting up a server.

If you select anything other than “Accept all connections” then you can tell the Cardbox Server to listen on the loopback connection as well by turning on the option “Also accept connections from the server’s own computer”.

Port number

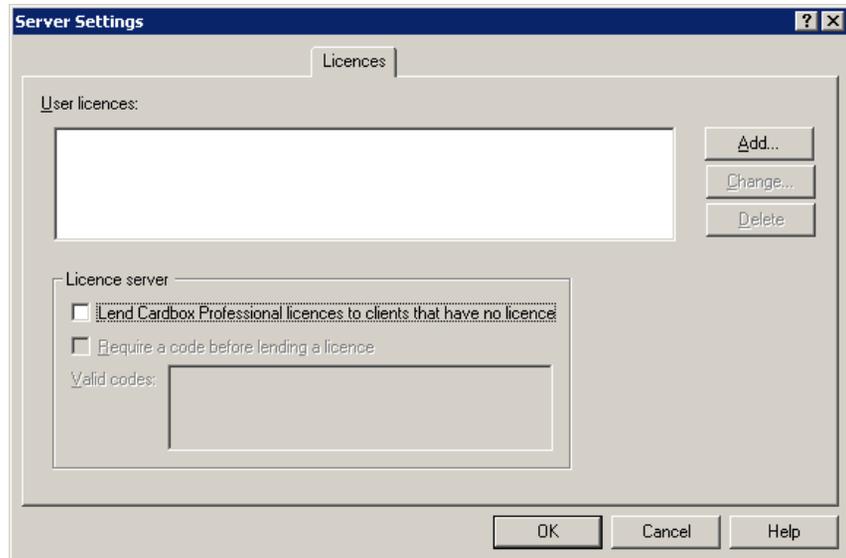
By default, the Cardbox Server listens for incoming connections on port 3105. Port 3105 is officially reserved for Cardbox, but if for any reason you need to use a different port then you can specify it here.

The Licences page

For the principles of licensing, see “Licensing” on page 9.

When you install the Cardbox Server, you install a licence for it as part of the setup procedure (see page 15). This lets you run the Cardbox Server and allows any number of Professional Edition users of Cardbox to connect to the server and open databases.

The Licences page lets you add user licences to the Cardbox Server, to enable it to serve Cardbox users who haven’t got their own Professional Edition licence.



To add a licence

1. Click on “Add”.
2. Fill in the form with the licence details, and press OK.

To change an existing licence

1. Highlight the licence in the User Licences list.
2. Click on “Change”.
3. Fill in the form with the revised licence details, and press OK.

To remove an existing licence from the list

1. Highlight the licence in the User Licences list.
2. Click on “Delete”.

To confirm or discard your changes

None of these changes will take effect until you have pressed OK to close the Cardbox Server Control. If you make a mistake, just press Cancel and all your changes will be discarded.

User licences

The number of users specified in the User licence determines the maximum number of users who can simultaneously have databases open on this Cardbox Server under that licence; but these can be different users at different times.

Remember that Professional Edition users are automatically allowed to connect without requiring any User licence on the server.

Read-Only User licences

A Read-Only User licence allows users of the Client or Home Edition of Cardbox to connect to the server and open databases in a read-only mode: that is, in a mode in which they can search, view, and print records but cannot make changes to the database.

For licensing purposes, the Cardbox Server considers a read-only user to be someone whose is currently using a read-only user profile: that is, one that doesn't allow editing. If there are no spare User licences available but there are Read-Only User licences, a new user will only be able to open a database if he uses a read-only user profile.

Combining multiple licences

You can install several licences on the same Cardbox Server, and the number of users will be added together. For example, adding a 3-user User licence, a 10-user User licence, and a 10-user Read-Only User licence will result in a Cardbox Server that can accept up to 13 simultaneous users plus a further 10 who are only using databases in a read-only mode.

Professional Edition licences

Strictly speaking, the Professional Edition licence belongs to Cardbox rather than the Cardbox Server. Nevertheless, you can install this licence into the Cardbox Server instead of into Cardbox. If you do this, the Cardbox Server will treat it like an ordinary User licence and it will increase the number of users who are allowed to connect to the Server. You **must not** install the same licence on both Cardbox and the Cardbox Server.

Setting up a licence server

(This is a specialised feature and not everyone will find it relevant).

The commonest arrangement for licensing Cardbox has the licences stored in files that are accessible to the Cardbox program. On a network, these licences are stored in a shared directory that is accessible to all Cardbox users. If you set things up like this then the Cardbox Server is not involved in licensing.

If you are dealing with Professional Edition licences, you can also organise things another way:

1. Install the Professional Edition licences on the Cardbox Server, using the Licences page.
2. Tell the Server that it is allowed to lend these licences. To enable licence lending, turn on the option “Lend Cardbox Professional licences to clients who have no licence” in the Licences page.
3. On each user’s computer, install Cardbox without any licence at all. During the installation process, tell Setup that Cardbox should attempt to borrow a licence from the specified Cardbox Server.
4. Each time someone runs Cardbox, it will contact the Cardbox Server and ask to borrow a licence. If it succeeds, it will behave just like any other Professional Edition copy. If it fails, it will behave like a Client Edition: in other words, databases on the user’s own computer will be restricted to read-only access.

The main advantage of setting licensing up like this is that you don’t need to set up any shared directories to store the Cardbox licences: indeed, it is possible for someone working at home on an Internet connection to borrow a Professional Edition licence whenever necessary.

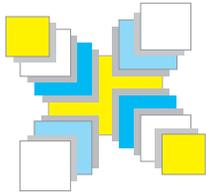
- Until it is borrowed, any Professional Edition licence on the Cardbox Server continues to count as an extra User licence, just as if licence lending had never been set up.

Loan codes

You may not want everyone who can connect to your Cardbox Server to be allowed to borrow licences. To restrict licence lending, turn on “Require a code before lending a licence” and type a code into the Valid Codes box. Codes can contain alphabetic or numeric characters: ABCD and 124JXZ are both valid codes.

Each user’s Cardbox then needs to be configured (in the appropriate Setup page) to present the same code to your Cardbox Server when it tries to borrow a licence.

You are allowed to enter more than one code into the Valid Codes box: separate them with spaces, not with punctuation. In this case the Cardbox Server will accept any of those codes as being valid. You could, for example, decide to give a different code to every potential borrower, and if you then wanted to prevent one of those people from borrowing a licence, you would only have to edit “Valid Codes” to remove that user’s code.



Part Three

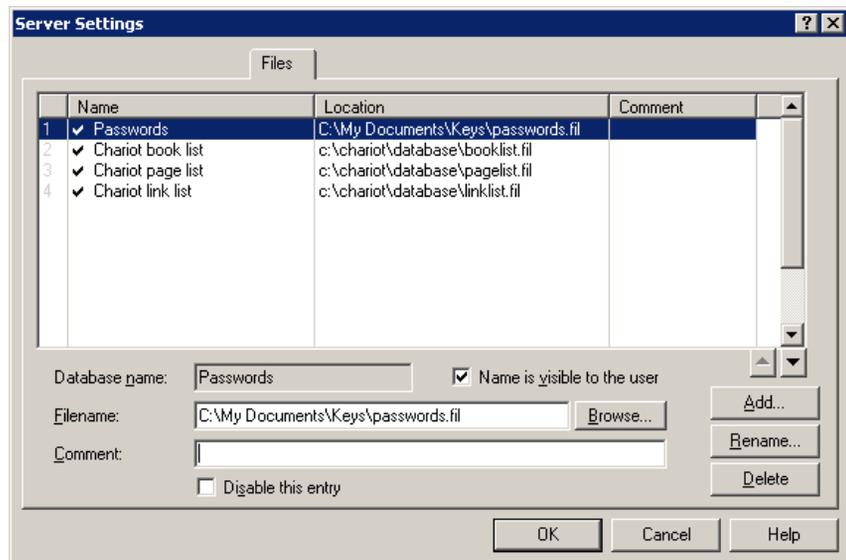
Sharing databases

*How to make databases available for users to share;
using the automatic directory; creating databases.*

The Files page

For how to open the Cardbox Server control, see page 17.

The Files page of the Cardbox Server control allows you to specify the databases that users can access on the server. Any changes you make won't take effect until you press OK. If you change a database's filename or make it inaccessible, this won't affect any user who already has that database open.



At the top of the Files page you'll see a list of databases. These are shown in the order in which users will see them in the **File > Open » Server** command. You can sort the list into sequence by clicking at the top of the relevant column or you can move an individual entry by highlighting it and then using the up and down arrow buttons just below the list.

Attributes of each database

Visibility

A tick next to the name of a database indicates that it is visible in the list displayed by the **File > Open » Server** command. If a database is invisible then a Cardbox user can still open it, by typing its name explicitly into **File > Open » Server**.

Database name

The database name is the name by which the database is known to users of Cardbox. Database names are case-blind, so THINGS and Things are considered to be the same database name. Database names may contain spaces but they cannot contain underline characters (“_”).

Location

The location is the actual filename of the database file (filetype `.fil`). It is used by the server only and is invisible to Cardbox users.

The filename is interpreted by the Cardbox Server while it is running, so (for example) `C:` refers to the C drive of the computer that is running the Cardbox Server. This is an important point if you are running the Cardbox Server control remotely: do not confuse your own C drive with the C drive of the server! See page “Finding out the name of an existing file “ (p.33) for more information.

Comment

This is ignored by the Cardbox Server and is there solely for your own information while you are manipulating the list of databases.

Disabled entries

Sometimes you may want to disable some of your database entries without deleting them – perhaps when testing a new configuration. Disabled entries are shown in grey in the list of databases on this page, and they are ignored by the Cardbox Server.

Using the Files page

To add an existing database to the list - press the Add button and type the name of the new database. You will then be returned to the database list and you can set the database’s other attributes.

To create a new database – see page 36.

To remove a database from the list – click on the database entry to highlight it and then press the Delete button. This doesn’t delete the database files themselves, only the database entry that tells the Cardbox Server which file to use.

To change the attributes of a database – click on the database entry to highlight it and then use the boxes and buttons below the list to change whatever needs changing. Note that if you want to change the database name then you will have to press the Rename button.

Finding out the name of an existing file

If you have been used to opening a database from your workstation by using File > Open » My Computer and a network link (or if you have been using Cardbox 2.0 or earlier) you'll probably have been using a filename that looks something like `N:\path\filename.fil`. This won't be a suitable name to put into the Cardbox Server's file list, because it refers to a network drive. Here is how to decode a network filename into a real filename on the Cardbox Server.

Decoding the drive letter

Suppose you have a network drive called `N:` on your computer. Here are three ways of finding out what it really means.

- Look at the list of drives in Windows Explorer. It will report something like "mydata on ORANGE (N:)" (this is just an example: your names will be different).
- In Windows Explorer, use the command **Tools > Map Network Drive** and find drive `N` in the list – you will see something like `\\ORANGE\mydata`. A name in this form is known as a UNC name.
- In a command prompt window, type the command `NET USE`. This will list all the drive letters together with their "remote name", which will again give you the UNC name of the network drive.

Decoding the UNC name

The UNC name of the network drive looks something like `\\ORANGE\mydata`. This says that the computer on which the resource is stored is called `ORANGE`, and the name of the resource is `mydata`.

Assuming that your server computer really is called `ORANGE`, you're nearly there: all you need to do is find out what directory on the server corresponds to the `mydata` resource.

On the server (not on your workstation), open a command prompt and type the command `NET SHARE`. This will list all the shared resources together with the real name of each resource. You might find, for example, that `mydata` corresponds to `C:\Shared Documents\Example`.

Putting it all together

So, assuming that everything matches this example, here's an example of how you'd get the real server-based name of a file.

Name viewed from the workstation: `N:\Cardbox\myfile.fil`

UNC name: `\\ORANGE\mydata\Cardbox\myfile.fil`

Real name: `C:\Shared Documents\Example\Cardbox\myfile.fil`

This real name is the name you will need to put into the Files page of the Cardbox Server control if you want to share this database using the Cardbox Server.

You may wonder why we don't provide you with a simple tool for finding out server-based filenames instead of making you go through all these steps. The reason is that two different computers are involved. Your own workstation is the computer that translates the network drive letter into a UNC name, and the server is the computer that translates the UNC name into a real directory name – so there is no one place where all the information is available at the same time.

The automatic directory

The automatic directory is a simple way of sharing a whole collection of files at once. If you give the Cardbox Server an automatic directory, it will create a database name for each filename in that directory, and it will add those database names to the list that Cardbox then displays in **File > Open » Server**.

The automatic directory is simpler to use than the Files page but it is less powerful: you can't control the database names (they are deduced automatically from the filenames) and all the names are always visible to Cardbox users.

If a database name appears explicitly in the list in the Files page and the same database name is also deduced from a filename in the automatic directory, it is the definition in the Files page that wins: this is because we reckon that something you specify yourself by hand should take priority over something generated by an automatic process.

Filenames with underlines in them (“_”) won't be included in the automatically generated list: this is because database names aren't allowed to contain underlines.

To set up an automatic directory, use the options in the Server page.

1. Turn on the Automatic Directory option
2. Press the Browse button and navigate to the directory you want to use as the automatic directory.

If you want to allow users to create databases in the automatic directory:

1. Turn on the Allow Users to Create Databases option.
2. If you want users to have to enter a password before they can create a database, enter the password into Password for Database Creation.

Creating a new database on the server

Using the Files page

See page 31.

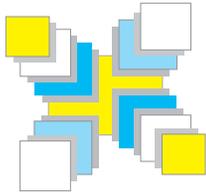
1. Press the Add button to add a new entry. Give the database whatever name you want. Make the database visible or invisible, whichever you prefer. Enter the filename that you want the database file to have. Windows will warn you that the file does not exist and ask if you want to create it: say Yes. (The database file won't actually be created until step 3).
2. Press OK to close the Cardbox Server Control and save the changes you have made.
3. Now, in Cardbox, use File > New Database » Server. If you made the database visible, you can pick its name from the list; otherwise you will have to type in the name. You will now have a blank, newly created database, just as you would if you were creating a database on your own computer.

Using the Automatic Directory option

See page 35.

1. Turn on Allow Users to Create Databases. Save this change by pressing OK.
2. In Cardbox, use File > New Database » Server. Type in the name of the database you want to create.

You can password-protect this process by entering a password in step 1, in which case Cardbox will ask for a password in step 2. This lets you control which users are allowed to create databases.



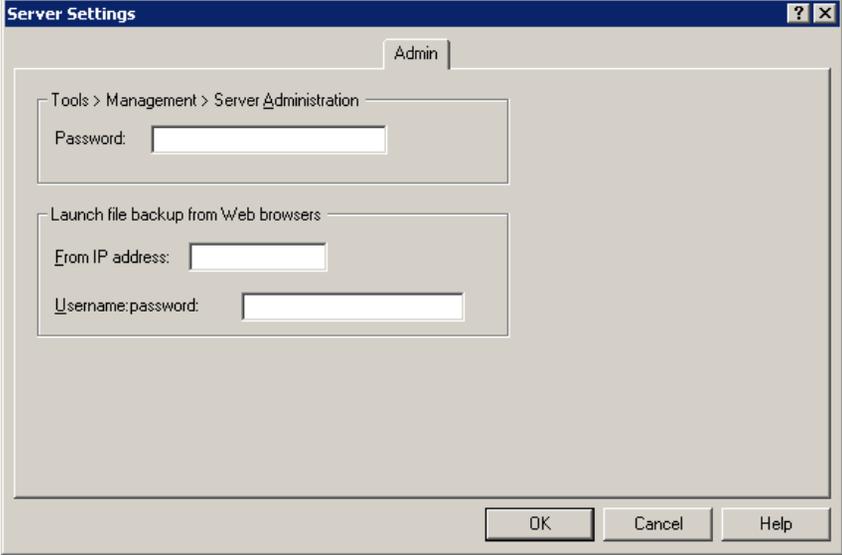
Part Four

Security and administration

Controlling access to administrative features, profiles and encryption; backup and download; the log file.

The Admin page

This page controls miscellaneous settings to do with server administration.



The screenshot shows a dialog box titled "Server Settings" with a tab labeled "Admin". The dialog box contains the following elements:

- A breadcrumb path: Tools > Management > Server Administration
- A "Password:" label followed by a text input field.
- A section titled "Launch file backup from Web browsers" containing:
 - "From IP address:" label followed by a text input field.
 - "Username:password:" label followed by a text input field.
- At the bottom right, there are three buttons: "OK", "Cancel", and "Help".

Controlling file lists from a client

Cardbox has a command, Tools > Management > Server Administration, that allows the user to control the Cardbox Server's file lists directly. This can be very useful if the Cardbox Server is running on a remote server that isn't otherwise accessible, but it is a powerful command and not everyone should be allowed to use it.

- To permit the use of this command, think of a password and type it into the Tools > Management > Server Administration Password box in the Admin page. Anyone who uses Cardbox's Tools > Management > Server Administration command will have to enter this password before being allowed to do anything.
- To prevent the use of this command, leave the Password box blank.

Performing backups

In a large corporate network you may not be able to find a time when you can guarantee that no-one is using a Cardbox database. Standard backup methods work only if the file you are backing up is not currently in use, and even those backup programs that have special provision for backing up busy files will only be able to back up what is actually in the disk file at the time of the backup: this can cause trouble if someone is making changes to a database because not everything will necessarily have hit the disk at the time the backup is done.

Cardbox offers two solutions to the problem of backup. Because they are implemented by the Cardbox Server, both solutions produce backups that are valid copies of your database files – if an update occurs while a file is being backed up, the backup will either include or not include the update: it will not be in some weird half-way state.

Using a web browser

You can connect to your Cardbox Server using a web browser and request a backup from there. Here are some example of the address that you need to connect to from your browser:

- If your Cardbox Server is running on a computer called `myself`, the address is `http://myself:3105/backup.htm`.
- If it is running on a computer with IP address `127.0.0.1`, the address is `http://127.0.0.1:3105/backup.htm`.

When you open this page you will see a backup form, which asks you for the name of the database: this is the name as seen by Cardbox users, not the actual filename. It also asks you for the filename to which the database should be copied: this is the full filename of the intended backup file including any necessary drive and directory names. No file should already exist with this filename: to avoid accidents, the backup function refuses to overwrite existing files.

When you press the Perform Backup button, the Cardbox Server will make a copy of the database file and then display a confirmation page.

Two settings on the Admin page of the Cardbox Server Control determine who is allowed to perform a backup using a web browser:

From IP Address – if you type an IP address in this box, anyone connecting from that IP address will be allowed to perform backups. If you type `0.0.0.0`, anyone from any IP address at all will be allowed to perform backups.

Username:password – you can type a user name followed by a password into this box. For example, typing `cat:mouse` will give a user name of `cat` and a

password of `mouse`. When you connect to the backup page, your web browser will ask you for a user name and password before the page can be opened.

Only one of these tests needs to be successful before the backup page will open. The most common configurations are:

IP Address blank, username:password blank: the backup page can never be opened.

IP Address set to a value, username:password blank: only someone from the specified IP address can open the backup page.

IP Address blank, username:password set to a value: the browser will always ask for a user name and password and needs a correct entry before it will open the backup page.

IP Address set to a value, username:password set to a value: someone from the designated IP address can open the backup page at once without any further formalities; other users have to enter a user name and password.

Downloading backup copies

An alternative backup that requires no server configuration at all is to run Cardbox, open the database, and use the **Tools > Management > Download** command. This copies the file to the computer that is running Cardbox: this will be a valid file even if the Cardbox Server was halfway through doing an update.

Tools > Management > Download allows you to overwrite a file. In fact, the most efficient setup is to download repeatedly onto the same file on your PC, because the Download command can check your PC's file against the file on the Cardbox Server and download only the parts of the file that have changed since the last download.

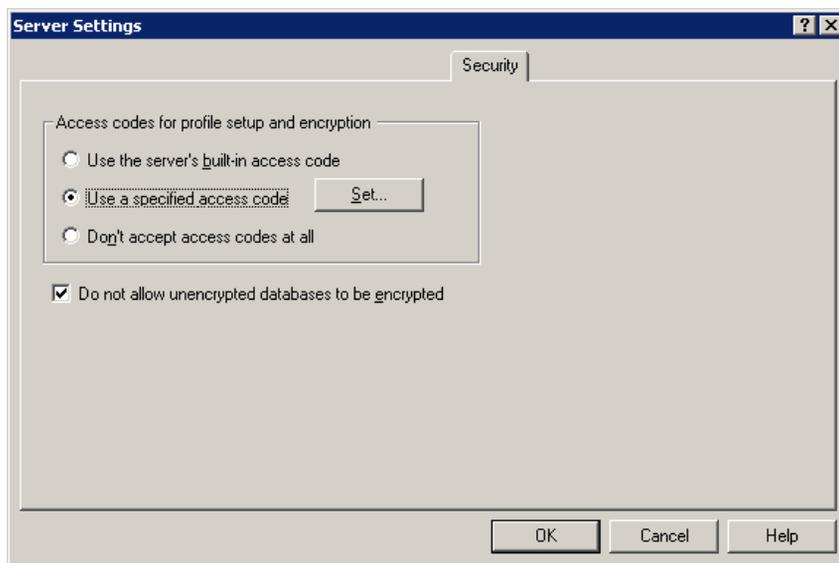
The useful thing about this method is that it results in a copy of the server database being stored on your own computer. Even if you are sluggish about backing up your computer, having a copy of the database in two places already adds some security.

- If user profiles are set up for a database, **Tools > Management > Download** can only be done by using the master profile.

Backing up encrypted databases

An encrypted database can be backed up like any other: Cardbox makes no distinction. The backed-up copy of the database is, of course, encrypted as well, just like the original.

The Security page



Controlling setup of user profiles

Setting up user profiles is a powerful and potentially dangerous activity. If access to the feature were not controlled, an enemy could cripple you simply by opening your database and giving it a master password that only he knows (master passwords can be reset but the process is slow and expensive). Accordingly, when you set up a database's user profiles for the first time, Cardbox asks for an access code.

Access codes are derived from the serial number of the running copy of Cardbox, and they can be obtained from us on request when you register Cardbox: for security, access codes are sent by post directly to the registered user.

The approach described above is valid for databases created on the user's own computer, but things aren't as simple if a database resides on a Cardbox Server and doesn't yet have a master profile. Requiring an access code for Cardbox itself wouldn't be much protection (because a determined enemy would get hold of a copy of Cardbox whose access code he knew), and so the Cardbox Server offers three alternatives:

Use the Server's Built-In Access Code requires the access code that you received when registering the Cardbox Server.

Use a Specified Access Code requires an access code that you specify. If you suspect that the access code has been revealed then you can always change the access code.

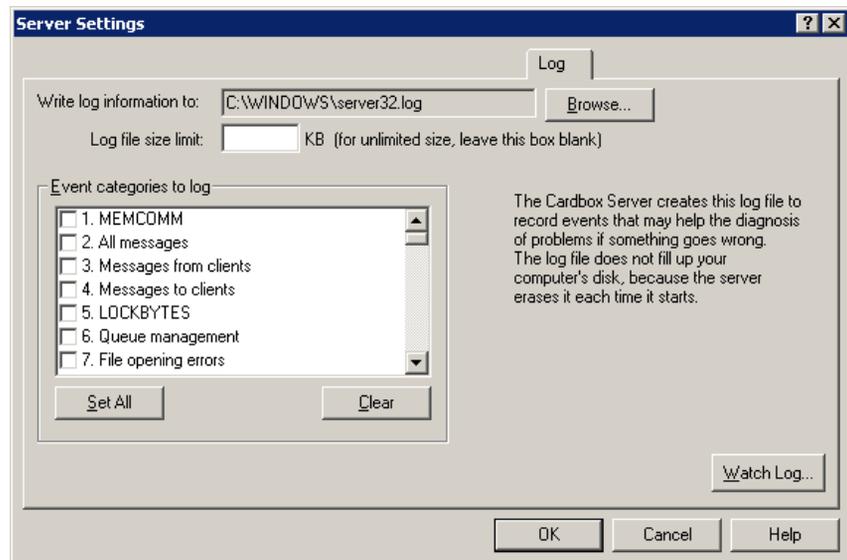
Don't Accept Access Codes means that no-one can set up user profiles for this database while it is on the Cardbox Server. If you want to set up user profiles, you will have to copy the database to your own PC, set up profiles there, and then upload the altered database to the Cardbox Server.

Controlling use of encryption

Encrypting a database is a radical act and if the key is forgotten or deliberately destroyed then your data will be useless. Cardbox protects you as best it can, by demanding the password of the master profile (or the access code, if no user profiles exist) but the Cardbox Server can provide an extra level of protection. If you turn on Do not Allow Unencrypted Databases to be Encrypted, the Cardbox Server will simply refuse to encrypt any database that isn't already encrypted. Changing encryption keys or removing encryption are still permitted.

The Log page

Sometimes mysterious things happen and you ask us for help. We, in turn, need to know what has been going on, and one of the ways of doing this is to get the Cardbox Server to write a log file. The log file will list various events and will enable us to give you better support. Don't set anything in this page unless we ask you to.



If it becomes necessary to write a log, we will tell you which settings we want you to make.

Upgrading from Cardbox 2.0

How Cardbox 2.0 worked

Cardbox 2.0 (and earlier versions of Cardbox and Cardbox-Plus) used the following system for sharing databases on a network:

- A single control file called `CARDBOX.SHR` coordinated the use of Cardbox as a whole.
- For each shared database, a control file of filetype `.LOK` coordinated the use of the database.

Consequences of this setup included:

- All Cardbox users had to have read/write access to `CARDBOX.SHR`.
- All Cardbox users had to have read/write/create access to directories that contained databases, so that they could create and write to the `.LOK` file.

How Cardbox 3.0 works

With Cardbox 3.0, file sharing has been replaced by a client-server architecture. The Cardbox Server runs on one computer on the network and provides shared database services to all Cardbox users.

- `CARDBOX.SHR` is no longer needed.
- `.LOK` files are no longer created. Cardbox users do not have access to any shared directory.

A simple strategy for conversion

This is not the only way of converting your network from the old style to Cardbox 3.0, but it has been designed to be quick and simple to implement.

1. Perform an audit to see what shared databases exist. Move them so that they are all on the same computer, in a directory that is not shared on the network.
2. On this computer, install the Cardbox Server.
3. Set the Automatic Directory to be the one containing the shared database files.
4. Set the Cardbox Server to run automatically when the computer starts.
5. Install the Cardbox program files, along with the multi-user Professional Edition licence, in a shared directory on the network. This can be on the same computer that is running the Cardbox Server, but it doesn't have to be.

6. To give a workstation user access to the Cardbox database files, use Windows Explorer to navigate to the shared directory and then double-click on `CARDBOX3 . EXE`.

Separate installation on each computer

A variant is possible if you prefer to have programs installed on each workstation rather than centrally (either because it is company policy or because the network is unacceptably slow). Steps 1 to 4 are the same. Then:

5. Designate a shared directory to hold the licence data. All Cardbox users will need read-only access to this directory.
6. Choose a workstation. Temporarily give it read/write access to the shared directory. Install the Cardbox program files on one workstation, and as part of the Setup process, tell Cardbox to store its licences in the shared directory.
7. To give a workstation user access to the Cardbox database files, install Cardbox on the workstation and tell the Setup program the name of the shared directory where the licence is stored.

Opening databases

Previously, users will have been accustomed to using **File > Open** and navigating to the directory that contains a shared database.

With Cardbox 3.0, users should use **File > Open » Server**, select the name of your server from the list (or type it in if it is not listed), and then pick the database they want from the list that appears.

There are other differences between Cardbox 3.0 and earlier versions, but these have nothing specifically to do with networking and you will find them listed in the appendix of *The Cardbox Book*.

A brief introduction to TCP/IP

This section is quite technical but you almost certainly won't need to read it in any detail unless you have an unusual configuration or unusual problems.

TCP/IP

TCP = "Transmission
Control Protocol".
IP = "Internet Protocol".

TCP/IP was first developed for use on the Internet but nowadays most Windows networks use it as well: if yours is an old network that does not have TCP/IP set up, you can install it using the Networking control in the Windows Control Panel.

TCP establishes a reliable connection between two computers: "reliable" in the sense that data won't be corrupted or go missing, although if the connection is broken altogether then communication between the two computers will end.

Identifying computers

When you are in Cardbox and you use File > Open » Server to open a Cardbox Server, you need to tell Cardbox which server to connect to, by entering the server's **domain name** or its **IP address**. When you are setting up a Cardbox Server, you therefore need to have at least one of these pieces of information so that people who want to connect to the server know what to type.

Domain names

LAN = "Local Area Network".

Normally, every computer on a network has a name that identifies it uniquely on that network. On the Internet, these addresses come in several parts separated by dots, like `www.cardbox.com`; on a LAN, they will be simpler, often just one word like `JUNO` or `LIBRARY`, since the name only has to be unique on this one network.

When you've decided which computer to use for the Cardbox Server, ask your system administrator what the name of that computer is. If you are your own system administrator and you are running Windows, you can use the Computer Name page of the System Properties window to tell you the computer's name.

IP addresses

If using a domain name doesn't work for some reason, you can tell Cardbox to connect to a server by using its IP address. An IP address is the computer network equivalent of a telephone number, and it is usually written as four numbers separated by dots: for example, `212.23.248.33`. The translation from domain names to IP addresses is normally automatic, but if something isn't correctly set up with the domain name system in your network, the translation may fail. In that case,

using the server computer's IP address is a quick way to get things working until the underlying problem is resolved.

Discovering a computer's IP address

Your system administrator should know how to get the IP address. Otherwise, in Windows, you can do the following:

These instructions are for Windows XP. Different versions of Windows have slightly different ways of getting at this information: consult your system documentation for details.

1. Within "Network Connections", right-click on the connection you're interested in. If you have several network connections then make sure you choose the one that people will be connecting to you on, because your computer may have a different IP address when viewed from different connections.
2. Select "Properties" from the menu that pops up.
3. In the Properties window, select the General tab.
4. In the list, select "Internet Protocol (TCP/IP)", then press the Properties button.
5. In the Internet Protocol (TCP/IP) Properties window, look at the setting. If "Use the following IP address" is turned on, you will see the IP address just below it; if "Obtain an IP address automatically" is turned on, then you have a "dynamically allocated" IP address, which means that it may change from time to time.

Remember to do all this on the computer that is running (or going to run) the Cardbox Server, not on your own computer; otherwise you'll end up getting your own computer's IP address!

The trouble with dynamically allocated IP addresses

If you have a dynamically allocated IP address then this means that the IP address may change every time your computer starts up and connects to the network. This makes it impractical for Cardbox users to use IP addresses to connect to the Cardbox Server, and you should stick to domain names.

ISP = "Internet Service Provider".

If you are trying to make databases available across the Internet, and your Internet connection has a dynamically allocated IP address, then you have a problem. Ask your ISP about getting a statically allocated IP address, or look up "dynamic domain" in a Web searcher to find out about services you could use to set up a domain name that will always point to your computer.

Loopback

When you're setting up and testing a Cardbox Server, it is often useful to run Cardbox on the same computer, just to see that everything is working.

The special domain name "localhost" always refers to the computer you're on – so when you want Cardbox to connect to the Cardbox Server on the same computer, just use the server name `localhost`, or its IP equivalent, which is `127.0.0.1`.

Firewalls

The purpose of a firewall is to control TCP/IP communications and one of the commonest ways in which it does this is by inspecting each incoming or outgoing connection request and checking the port number that it is using (port numbers identify what program the request is intended for). The idea is that you can then block all connection attempts except those that you know are legitimate.

- If you have a firewalled system and want to run the Cardbox Server, ensure that the firewall has opened port 3105 for incoming TCP connections.
- If you have a firewalled system and want to use Cardbox to connect to a Cardbox Server elsewhere, ensure that the firewall has opened port 3105 for outgoing TCP connections.

The Windows Firewall

The version of the Windows Firewall included with Windows XP Service Pack 2 will pop up a message when you first run the Cardbox Server. Tell it that you want to allow incoming connections, and it won't bother you again.

This version of the Windows Firewall doesn't monitor outgoing connections, so you don't need to do anything special when using Cardbox to connect to a Cardbox Server.

Virtual private networks

Virtual private networks (VPNs) are an exception to much of what we will be saying about LAN and Internet connections. If you have a VPN, it will make your computers look as if they're on the same LAN even if they happen to be in different cities; and although it may well use the public Internet to transmit data from one city to another, this fact will be hidden from the computers on your network and the data will be encrypted so that outsiders cannot breach your privacy.

In the remainder of this book, whenever we talk about a local area network, we effectively mean "a LAN or a VPN", and we won't consider a computer that has a VPN connection as really being connected to the Internet at all.

The Cardbox Server under Linux

The Cardbox Server is available for Linux as well as for Windows. All the principles of operation are the same but the details are different, mostly because the Linux version uses configuration files directly instead of hiding them behind a control in the Windows control panel.

Installation

The full instructions for installing the Linux version are on the Cardbox web site and are accessible from the Linux version's download page. Here is a summary of the steps that you need to go through: the actual filenames may be different from the ones shown here.

Choose the directory where you want to install the Cardbox Server, and create it if necessary. The directory name you choose will depend on the conventions that you are using, but we will use `/home/cardbox` as an example.

Change to the directory you have chosen.

Download the program file `cshared.tar.gz` from the Cardbox web site.

Enter the command

```
tar -xzvf cshared.tar.gz
```

`tar` will report the program name (`cardbox-shared`) as it decompresses it.

You can now delete `cshared.tar.gz` because you have no further need for it.

Inserting licence details

Create a text file called `licence.ini` in the same directory as `cardbox-shared`. You can do this using `cat` or `vi` or your favourite text editor. We will give you the licence details that you need to put into this file, but here is an example of the format:

```
[Cardbox]
Signature = 3967-2Y47-6739-55X0
Users = 0
Type = 4
Serial Number = 0000000
```

Removing the Cardbox Server

There is no automated removal process for the Linux version. Simply delete all the program files and the `/home/cardbox` directory.

Configuration

There is no Cardbox Server Control in Linux, so all configuration has to be done by editing the configuration file `server.ini`, which is located in the same directory as `cardbox-shared`. You can do this using `cat` or `vi` or your favourite text editor.

The general format of `server.ini` is that of a Windows `.ini` file. It is divided into sections, marked by a section name in square brackets, and within each section there are values listed, each with a name, an equals sign, and a value. Here is an example:

```
[Server]
Access = RW
Log = 9
Description = Our own local Cardbox server.
[Debug]
LogMask1 = -1
LogMask0 = -2
```

Blank lines are allowed for clarity, and a semicolon can be used to indicate that the rest of a line is a comment. The main thing to be aware of is that each section name should only appear once, or the Cardbox Server cannot be guaranteed to read all the values correctly.

www.cardbox.com/linux.htm

For a full listing of the possible entries in `server.ini`, see the Cardbox web site.

Notifying changes in `server.ini`

Under Linux, the Cardbox Server doesn't automatically detect changes in `server.ini`. To notify it of a change, send it the HUP signal. Use `ps` or `ps -a` to find out the process ID of the Cardbox Server process and then use `kill -HUP` to send the signal to that process.

Starting and stopping the server

Starting the Cardbox Server

Change to the directory containing the Cardbox Server and use the command

```
./cardbox-shared -d
```

to start the Server as a daemon.

If you omit `-d`, the Cardbox Server will run interactively, logging all its activity to the console: in this case you can stop it by typing `Ctrl+C`.

Stopping the Cardbox Server

First see if the Cardbox Server is running and find out what its process ID is. For example:

```
ps -a | grep cardbox
```

will report the process ID of the Cardbox Server if it is running.

Then use `kill` with the process ID to ask the Cardbox Server process to stop. This can take a few seconds because the Server may have to write unwritten data to the disk.

It is not always possible to start the Cardbox Server immediately after stopping it, if there were some active connections to clients when you stopped the Server. This is because some of these connections may persist for a while (you can use `netstat` to see them) and until they have all timed out it will not be possible for the newly started copy of the Cardbox Server to listen for new connections.

Starting and stopping the Cardbox Server automatically

We do not supply startup or shutdown scripts for the Cardbox Server because Linux distributions vary in the way they organise their `rc.d` files, but if you have some experience of shell programming then it is possible to create your own. You have seen how to use `ps` to determine whether the Cardbox Server is already running, so your startup script can exit immediately if this is the case.

As for shutdown, the script can automate the manual procedure shown above, but it should then wait for the Cardbox Server process to terminate so that system shutdown does not happen while the Server is still writing data to the database files.